SYNOPSIS ON

"Smart Plant Care Companion"

Submitted in

Partial Fulfillment of requirements for the Award of Degree *of*

Bachelor of Technology

In

Computer Science and Engineering

(Internet of Things)

By

(Project Id: 23_CS_IOT_2B_12)

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1. Introduction

- Introducing our Smart Plant Watering System – an innovative solution to the common challenges of plant care.
- **Challenges Addressed:**
  - **Inefficient Watering:** Conventional watering practices often lead to overwatering or underwatering, causing plant stress and reduced growth.
  - **Water Wastage:** Manual watering can result in unnecessary water wastage, especially during rainy periods.
  - **Limited Customization:** Lack of tailored care options for different plant species can hinder optimal growth.
  - **Environmental Impact:** Excessive water consumption contributes to environmental concerns, such as water scarcity and rising water bills.
- **Key Features:**
  - **Precise Moisture Monitoring:** Advanced soil moisture sensors provide real-time data to determine optimal watering times.
  - **Intelligent Watering:** Integration with weather forecasts enables the system to adjust watering schedules based on weather conditions, conserving water on rainy days and ensuring sufficient watering during dry spells.
  - **Customized Plant Care:** Users can select their plant types within the system, allowing for tailored care recommendations.

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2. Project Objective

- **Development of Innovative Solution:** The primary objective is to create an innovative Smart Plant Watering System that redefines traditional plant care practices through the integration of cutting-edge technology.
- **Optimization of Plant Care:** The project aims to optimize plant care by employing advanced soil moisture sensors to monitor moisture levels in real-time, ensuring precise and timely watering.
- **Water Conservation:** An essential goal is to reduce water wastage through intelligent watering schedules that leverage weather forecast data to adjust watering routines according to upcoming weather conditions, minimizing overwatering on rainy days and ensuring sufficient watering during dry periods.
- **Sustainability and Energy Efficiency:** The project is committed to sustainability by incorporating solar panels to power the system, reducing energy consumption and environmental impact.
- **Promotion of Responsible Gardening:** Through its water conservation features, energy-efficient operation, and sustainability efforts, the project ultimately seeks to promote responsible gardening practices and environmental awareness among users.

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3. Feasibility Study:

A feasibility study for the Smart Plant Watering System project is crucial to assess its viability, cost-effectiveness, and potential impact.

Technical Feasibility:

- **System Components:** The required components, such as microcontrollers, sensors, and pumps, are readily available in the market and are technically feasible to integrate.
- **Sensor Accuracy:** Soil moisture sensors and weather forecasting data are reliable and widely used, ensuring accurate plant care decisions.

Operational Feasibility:

- **Ease of Use:** The system should be user-friendly and accessible to a broad audience, ensuring operational feasibility.
- **Maintenance:** The system should be designed for ease of maintenance and repairs, minimizing operational challenges.

Economic Feasibility:

- **Cost Estimation:** The project's estimated cost includes components, tools, and potential expenses for educational content development. It is essential to compare this estimate with the available budget to ensure economic feasibility.

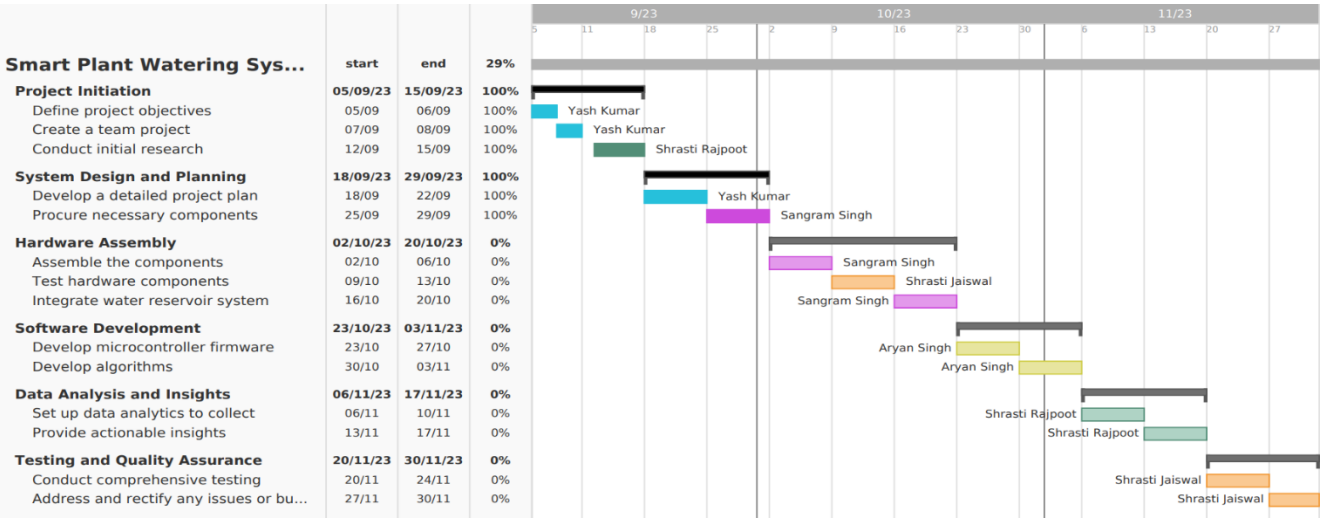
Schedule Feasibility:

- **Project Timeline:** Developing and testing the system should be completed within a reasonable time frame.
- **Resource Availability:** Ensuring that team members, tools, and materials are available as planned to meet project deadlines.

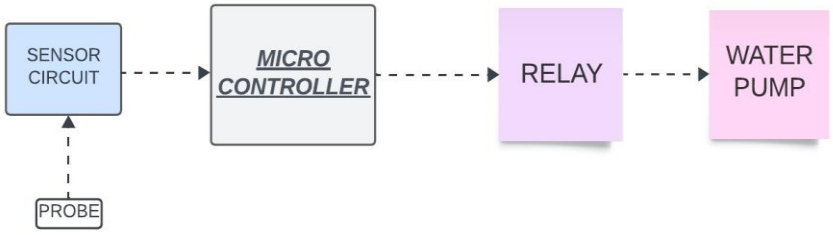
Legal Feasibility:

- **Compliance:** Ensure that the project complies with local regulations and standards, including environmental regulations and data privacy laws.

Start Date: 05-sep-2023 **End Date: 30-Nov-2023.**



4. Methodology/ Planning of work:



Smart Plant Watering System Architecture Diagram:

The **Smart Plant Watering System** consists of the hardware components, including the microcontroller, soil moisture sensors, water pumps, and other sensors.

Flow of Information:

- Assemble the Smart Plant Watering System hardware, including microcontroller, sensors, water pumps, and power supply.
- Test the hardware components for functionality and accuracy.
- Implement a water reservoir system.
- Develop the microcontroller firmware to control sensors, pumps, and data transmission.

5. Tools/Technology Used:

5.1 Minimum Hardware Requirements

Hardware required for the development of the project.

- Microcontroller (e.g., Arduino Uno or ESP8266)
- Soil Moisture Sensor
- Water Pump
- Tubing for Water Delivery
- Relay Module
- Water Reservoir (e.g., plastic container)

5.2 Minimum Software Requirements

Software required for the development of the project.

- Arduino IDE

6. References:

- https://www.researchgate.net/publication/337504097_Smart_watering_of_plants
- Smart watering of plants | IEEE Conference Publication | IEEE Xplore